

Educational Settings

The first prong of the strategy is directed at the educational setting. Educational settings, for purposes of this Initiative, are defined as medical schools, nursing schools, academic health centers, training programs for all levels of nursing education, and medical residency programs. While the components target the educational setting, they also involve the professional associations and decision-making bodies that represent and/or influence the educational setting. These include, for example, the Association of American Medical Colleges, the American Association of Colleges of Nursing, the Association of Academic Health Centers, and the Accreditation Council for Graduate Medical Education. The following components come from across the continuum of systemic change — from raising awareness and assessment, to development of core competencies, to the support of faculty champions and model programs.

Component A: Make the case for change in educational settings — Develop an effective case statement to convince decision-makers about the need for environmental health and pesticide education in medical and nursing educational institutions.

Component B: Define competencies and integration strategies for curricula — Produce National Guidelines that recommend competencies specific to the recognition, management and prevention of pesticide exposures, for all basic and advanced training in medicine and nursing; defines accompanying content areas; suggests methods of integration into curricula; and provides access to relevant resource materials.

Component C: Assess educational settings — Conduct an assessment of the target audience of educational institutions to determine (a) amount of existing coursework, (b) faculty members' current knowledge and comfort level with teaching pesticide-related topics, and (c) how faculty and educational institutions will best respond to educational programs and information resources. This assessment will be comprised of a literature review and a range of needs assessment analyses.

Component D: Secure official endorsements — Ensure the integration of the core competencies outlined in the National Guidelines into educational institutions by securing the official endorsements of key professional organizations and decision-making bodies.

Component E: Strengthen and build faculty champions – Create and support faculty champions within medical and nursing schools to teach environmental health and pesticide education in the curriculum, and to bring about change within their institutions.

Component F: Create teaching incentives – Influence the appropriate boards, organizations, and institutions that create board exams to include several key competencies on pesticides and environmental health.

EDUCATION COMPONENT A:

Make the Case for Change in Educational Settings

Statement

Develop an effective case statement to convince administrators, faculty, and students about the need for environmental health and pesticide education in medical and nursing education.

Expected Outcomes

- A written case statement that documents the key reasons why faculty members and administrators of academic institutions should be aware of pesticide-related health conditions, using persuasive data and documentation from the scientific literature, and stressing the importance of teaching pesticides content in their educational curriculum.
- Endorsement by leading national professional associations, national bodies, deans, and faculty committees.

Target Audience

Awareness and Motivation: This component is targeted at educational institutions and key strategic organizations that need to be convinced that the issue of pesticides and the need to educate health care providers about this issue are relevant to the educational settings of health care providers.

Proposed Activities

Activity #1

Research and develop a case statement, solicit peer review, and finalize with the input of key stakeholder groups in the field. The target audiences for the case statement are educational settings and the organizations that work with them.

Points to be covered in the case statement:

- Specific importance of environmental health education and the breadth of the problem of pesticide-related health conditions.
- Convincing arguments for why pesticides should be in the curriculum, with cited scientific data.

- Compelling arguments to gain the attention of health care students and faculty despite the fact that their time and attention are in high demand elsewhere.
- Emphasis that faculty do not need to become experts, and reassurance that experts exist in the field who can work with them on coursework and teaching.
- Emphasis on practical learning for students in settings where pesticide exposures may occur.
- Reassurance that user-friendly teaching materials are available for faculty to use, along with user-friendly guides, and curriculum maps indicating where pesticide topics could be inserted into the curriculum.
- Recommended amount of time to dedicate to pesticides in the curriculum that is reasonable given the other demands on academic institutions.

Activity #2

Promote the case statement through effective dissemination mechanisms to administrators, faculty, and curriculum committees, including print and internet information sources.

Activity #3

Publish journal or newsletter articles on “making the case” for the academic setting in professional journals and publications.

Activity #4

Hold strategic meetings with bodies that accredit health educational institutions and set curricular requirements, and with national leaders to seek their endorsement of the case statement. This includes identifying a subset of decision-makers who can be influenced by the case statement.

Stakeholders

- Professional associations
- Key accrediting bodies
- Curriculum committees
- Deans/Department chairs
- Collaborating federal agencies

Evaluation of Outcomes/Indicators of Success

- Complete case statement.
- Published articles in professional journals and newsletters.

- Position papers developed and adopted by professional associations.

Background

This component was crafted recognizing that we need to raise awareness about why educating health care providers about pesticide-related health conditions and exposures is so important. Many key decision-makers may still be unconvinced that this is an issue of concern. Although the supporting documentation is there, there is a need to pull the information together in a succinct case statement that shows clearly the relevance of this issue to academic institutions. The document will be used in outreach on the Implementation Plan, and will assist the entire field in “making the case” for the education of health care providers on this topic. The case statement will complement a similar statement to be created for practice settings.

EDUCATION COMPONENT B:

Define Competencies and Integration Strategies for Curricula

Statement

Produce National Guidelines that recommend competencies specific to the recognition, management and prevention of pesticide exposures, for all basic and advanced training in medicine and nursing; define accompanying content areas; suggest methods of integration into curricula; and provide access to relevant resource materials.

Expected Outcomes

- National Pesticide Competency Guidelines for Education that recommend competencies, content, insertion points into curricula, and resources.
- Endorsement of National Guidelines by leading national professional associations.

Target Audience

Readiness to Change: This component is targeted at administrators and faculty in educational institutions. The guidelines are to assist faculty in integrating the recommended core competencies into curricula. This component assumes that administrators and faculty members have been convinced that this is an important topic for their curricula and that they are ready to change their curricula.

Proposed Activities

Activity #1

Define the core competencies for educational institutions to teach about pesticides in basic and advanced curricula (See Table 7).¹

The intent of Table 7 is to define competencies that could be integrated into existing curricula. The table links with a complementary document for practice settings.

¹ A start at defining competencies for the three levels of learning was done by a subgroup of the Education Workgroup in May 1999, and was further elaborated in July 1999 by a small committee. Subcommittee members included Andrea Lindell, Candace Burns, James Roberts, Matthew Kiefer, Annie Perez, Joan Weiss, Cleora Wittl, Ameesha Mehta, and Susan West.

Activity #2

Produce National Pesticide Competency Guidelines for Education to educate students about the recognition and management of pesticide-related health conditions and exposures. A complementary document focuses on the practice settings where primary care providers work.

An accompaniment to the *Recognition and Management of Pesticide Poisonings* handbook, the National Guidelines are designed as a user-friendly guide on how to integrate pesticides content into curricula. The Guidelines contain the following components:

- Recommended competencies.
- Relevant content for each competency area.
- Suggested points of insertion into curricula (expected to vary between medical and nursing schools as well as for basic or advanced training).
- Suggested resources to teach content specific to each competency in educational settings.

The National Guidelines do not contain actual teaching modules or resources, but rather provide a listing of relevant resources.

Activity #3

Promote the National Guidelines with key stakeholders. Solicit official endorsements and organizational support of report, including dissemination to their members.

Stakeholders

- Academic institutions
- National professional associations for academic institutions
- Faculty members who have already developed curricula

Evaluation of Outcomes/Indicators of Success

- National Guidelines completed and peer reviewed.
- Endorsement by key stakeholder organizations.



Background

In defining “competencies” in pesticides and environmental health, several key recommendations have helped to frame this component.

- **Build upon existing documents:** The competencies must relate to the Institute of Medicine competencies for medical and nursing education, so that no duplication of effort occurs.
- **Balance between pesticides and environmental health:** One of the most difficult questions is the relative balance between environmental health topics in general and pesticides in particular. Having the competencies deal specifically with pesticides avoids any charges of duplication, and might even be seen as a useful model for developing other competencies in specific areas.
- **Focus on basic and advanced levels:** Although Table 7 (page 47) presents competencies for three levels of learning (basic, advanced, specialty), the focus of the Initiative will be on basic and advanced, which are most relevant for training primary care providers. Other organizations, including the American College of Occupational and Environmental Medicine, American College of Medical Toxicology, and the American Association of Occupational Health Nurses, are focusing on specialty training.
- **Categorize the competencies:** The six categories of competencies shown in Table 7 were derived from a combination of the Institute of Medicine’s medicine and nursing recommendations. They are meant to apply to medical, nursing, and allied health school curricula. The six categories are:
 - Basic knowledge and concepts of pesticides
 - Diagnosis/assessment
 - Treatment/intervention/referrals/follow-up
 - Risk communication, advocacy, and ethics
 - Reporting
 - Legislative and regulatory knowledge.

Table 7

Table 7 indicates preliminary competencies formulated in 1999. Further developed competencies are available in 2002.

Table 7: Proposed Competencies for Educational Institutions

<p>Competency I: Basic Knowledge and Concepts of Pesticides</p>	<p>Basic: 4-year medical school, undergraduate nursing, undergraduate allied health professional education</p>	<p>Advanced: Medical residents, advanced practice nursing students, physician assistant students, other advanced degree programs (Faculty in primary care would need to be at this level to teach)</p>	<p>Specialty: Fellows and advanced students specializing in occupational and environmental health/medicine/nursing</p>
<p>1. Principles of Environmental and Occupational Health</p>	<p>1a. Understand principles of environmental and occupational health</p> <p>1b. Understand broad spectrum of chemicals classified as pesticides and areas of use (should be aware of various types of pesticides)</p> <p>1c. Understand mechanisms and pathways of exposure</p>	<p>1a. Strengthen skills from basic competencies</p> <p>1b. Understand temporal relationship between exposure and symptoms (Medicine)</p> <p>1c. Understand advanced toxicology, specifically related to organophosphates, carbamates, and pyrethroids (most commonly reported pesticides implicated in symptomatic illness)</p>	<p>1a. Apply validated epidemiologic and biostatistical principles and techniques to analyze injury/illness data in defined populations</p> <p>1b. Understand temporal relationship between exposure and symptoms (Nursing)</p> <p>1c. Understand and apply advanced courses in toxicology</p>
<p>2. Individual and Patient Knowledge and Skills</p>	<p>2a. Be aware of the environment in which the patient (and family) lives, works, and plays (understanding of the hazards and potential exposures in different settings)</p> <p>2b. Identify risk factors for pesticide exposure (e.g., occupation, location of home, vulnerable populations)</p> <p>2c. Recognize other family members may also be ill (possibly due to exposure in the home, or “paraoccupational exposures”, e.g., contaminated work overalls brought home)</p> <p>2d. Recognize socio-economic impacts on the patient of pesticide-related illness</p> <p>2e. Understand potential moral, ethical and legal implications for patients of reporting and referral</p>	<p>2a. Strengthen skills from basic competencies</p> <p>2b. Understand at a basic level the health effects of organophosphates and carbamates</p> <p>2c. Identify risks to patients served (i.e., special vulnerabilities of children, the elderly)</p>	<p>2a. Apply individual patient interventions to prevent or mitigate exposure and/or resultant health effects</p>
<p>3. Population-Based Health Knowledge and Skills</p>	<p>3a. Understand population-based health, including epidemiology</p> <p>3b. Recognize socio-economic impacts of pesticide-related illness</p> <p>3c. Understand potential moral, ethical and legal implications for the community of reporting and referral</p> <p>3d. Possess a basic awareness of the role of prevention, general awareness of benefits of alternatives to conventional pest control</p>	<p>3a. Strengthen skills from basic competencies</p> <p>3b. Develop more in-depth knowledge of the environment in which they are learning and practicing</p> <p>3c. Develop specific understanding of communities and populations at risk for pesticide exposure</p> <p>3d. Understand advanced epidemiology, specifically related to pesticide-related poisonings</p>	<p>3a. Develop, implement, evaluate and refine screening programs for groups to identify risks for disease or injury and opportunities to promote wellness</p> <p>3b. Apply community-based interventions to prevent or mitigate exposure and/or resultant health effects</p>

Table 7 (continued)

<p>4. Information and Resources</p>	<p>4a. Identify and access information on pesticides</p> <p>4b. Be aware of importance of information on pesticide labels</p> <p>4c. Be able to locate resources including web-based information, print materials, Material Safety Data Sheets (MSDS), and poison control centers</p>	<p>4a. Strengthen skills from basic competencies</p> <p>4b. Demonstrate ability to locate leading information resources and experts for health care providers</p>	<p>4a. Use appropriate written and computerized databases (e.g. MSDS, Registry of Toxic Effects of Chemical Substances [RTECS]) to identify hazardous ingredients of chemical agents</p>
<p>Competency II: Diagnosis and Assessment</p> <p>1. History Taking Differential Diagnosis</p>	<p>Basic</p> <p>1a. Be able to take occupational and environmental history</p> <p>1b. Be aware that signs and symptoms of pesticide exposure may be non-specific (there is nothing pathognomonic about most pesticide symptoms)</p> <p>1c. Be able to consider pesticides in differential diagnosis (pesticide exposures may result in health effects common to similar diseases)</p> <p>1c. Recognize signs and symptoms of pesticide overexposure, with priority given to widely-used pesticides with identifiable symptoms, such as cholinesterase-inhibitors and pyrethroids</p> <p>1d. Perform a complete and focused physical examination as indicated (ACOEM)</p>	<p>Advanced</p> <p>1a. Strengthen skills from basic competencies</p> <p>1b. Ask patients 2-3 screening questions (students need to know how to take a full occupational and environmental history before they are able to ask screening questions)</p> <p>1c. Identify signs and symptoms of overexposure to a wider range of pesticides</p> <p>1d. Be able to diagnose pesticide-related illnesses related to organophosphates and pyrethroids</p> <p>1e. Properly utilize cholinesterase testing</p>	<p>Specialty</p> <p>1a. Determine the nature and extent of potential pesticide poisoning or overexposure considering routes of exposure and routes of absorption</p> <p>1b. Detect, in so far as possible, pre-clinical or clinical effects arising from chemical exposure</p> <p>1c. Be able to order/ interpret appropriate diagnostic tests</p> <p>1d. Effectively diagnose pesticide-related illnesses</p> <p>1e. Provide consultation on diagnosis</p> <p>1f. Identify at risk populations, including children</p> <p>1g. Collaborate with other disciplines such as industrial hygiene, sanitarians, Cooperative Extension</p>

Table 7 (continued)

Competency III: Treatment/Intervention/ Referrals/Follow-up	Basic	Advanced	Specialty
1. Treatment	1a. Effectively treat health conditions related to pesticide exposures (Medicine)	1a. Strengthen skills from basic competencies 1b. Effectively treat health conditions (Nursing)	1a. Be able to effectively treat specific pesticide-related health conditions
2. Intervention	2a. Advise patients on how to decontaminate patient and environment following exposure	2a. Strengthen skills from basic competencies 2b. Provide specific guidance on how to decontaminate patient and environment following overexposure	2a. Identify and prescribe appropriate preventive action, for example alternatives to pesticides, substitution of harmful with less harmful products, or use of better system design, personal protective equipment and engineering controls for specific pesticides 2b. Develop and manage a comprehensive occupational health program
3. Referrals	3a. Refer to appropriate specialist (i.e., occupational medicine/nursing, industrial hygienist, environmental health specialist, Cooperative Extension) (Medicine)	3a. Strengthen skills from basic competencies 3b. Make appropriate referrals for medical diagnosis (Nursing)	3a. Provide consultation on treatment, intervention, and referrals
4. Follow-up	4a. Arrange appropriate follow-up (Medicine)	4a. Strengthen skills from basic competencies 4b. Arrange appropriate follow-up (Nursing)	4a. Provide consultation on follow-up

Table 7 (continued)

Competency IV: Risk Communication, Advocacy, & Ethics	Basic	Advanced	Specialty
1. Risk Communication	1a. Provide guidance and education to patients on how to minimize exposures to pesticides, and about the basic routes of exposure and absorption 1b. Advise patients to read pesticide label 1c. Refer patients to appropriate resources	1a. Strengthen skills from basic competencies 1b. Communicate on issues of risks and public health protection to the general public 1c. Publish research and intervention findings in the professional literature	1a. Communicate with media, the public, and policy makers on issues of scientific uncertainty 1b. Provide expert testimony on behalf of patients and communities 1c. Publish research and intervention findings in the professional literature
2. Advocacy		2a. Advocate on behalf of patients	2a. Communicate with media, the public, and policy makers on issues of scientific uncertainty 2b. Provide expert testimony on behalf of patients and communities
3. Ethics (under development)			
Competency V: Reporting	Basic	Advanced	Specialty
Reporting	1a. Understand importance of surveillance and incident reporting 1b. Understand case reporting requirements for pesticide exposures 1c. Report concerns about pesticide exposure situations to appropriate authorities	1a. Strengthen skills from basic competencies	1a. Interact with workers' compensation system efficiently and effectively

Table 7 (continued)

Competency VI: Legislative and Regulatory Knowledge	Basic	Advanced	Specialty
Legislative and Regulatory Knowledge	<ul style="list-style-type: none"> 1a. Understand that several pieces of federal law require health care providers to address pesticide poisonings 1b. Understand that 15 states have mandatory surveillance systems, and that 31 states have some form of reporting requirements 	<ul style="list-style-type: none"> 1a. Know the specific components of FIFRA, OSHA, TSCA and WPS that reference health care providers 	<ul style="list-style-type: none"> 1a. Influence policy regarding pesticides and public health

EDUCATION COMPONENT C:

Assess Educational Settings

Statement

Conduct an assessment of the target audience of educational institutions to determine: (a) amount of existing coursework, (b) faculty members' current knowledge and skill levels, and comfort with teaching pesticide-related topics, and (c) how faculty and educational institutions will best respond to educational programs and information resources. This assessment will be comprised of a literature review and a range of needs assessment analyses.

Expected Outcomes

Baseline data indicating the level of education currently taking place in academic institutions, current curricular content and emphasis on pesticides/environmental health, current knowledge of teaching faculty, and best mechanisms to reach and train faculty to teach.

Target Audience

Awareness and Motivation: This component targets academic institutions to determine their level of awareness; their level of interest in this topic; their knowledge and skills base; and the most effective ways to reach them through educational interventions, model programs, and resources.

Proposed Activities

Activity #1

Conduct a literature review to locate data and evidence of level of training in educational institutions.

Activity #2

Where literature review is lacking in data, conduct a combination of audience assessment activities, including focus groups and interviews, to collect baseline data and draw conclusions on the following questions:

- To what extent is the recognition and management of pesticide-related health conditions taught in the targeted academic institutions?
- What is the extent of the knowledge, attitude, and skill base of faculty members with regard to pesticide issues? Are they at the stage of needing to raise awareness, improve their knowledge and skills, or provide them with resources?

- What is the extent of faculty comfort level with teaching this topic area? What do faculty need to feel more comfortable about teaching this topic?
- What resources, and in what format (e.g., traditional lecture material, teaching modules, web-based, audio cassette, CD, video conference, satellite), do academic institutions most need to teach about this topic?

Activity #3

Produce a final report with recommendations for use in the development of the Initiative.

Stakeholders

- Professional associations that represent academic institutions
- Academic institutions
- Faculty curriculum committees
- Faculty members
- Students

Evaluation of Outcomes/Indicators of Success

- Comprehensive literature search documenting the findings of studies that have surveyed academic institutions and deans.
- Report with baseline data, conclusions, and recommendations.

Background

Any good plan has at its core a strong assessment component to collect baseline data on existing knowledge and skills, as well as to determine the most effective mechanism for reaching the target population. The importance of assessing educational institutions to determine what is already in place, and how best to structure the educational interventions was emphasized by participants during the development of the Implementation Plan.

This component will collect vital information not only for this Initiative, but also for the entire field of health care provider education. The assessment will also include a chance to determine where the target population “sits” along the continuum of change described in the section on Target Audience. Do most people lie at the beginning of the continuum where they will respond best to activities that raise their awareness and motivate them to care about this

issue? Or are they ready to make changes in their curricula and are in need of tools and educational resources? The assessment will answer these, and other key questions, to inform the implementation process and subsequent evaluation.

EDUCATION COMPONENT D:

Secure Official Endorsements

Statement

Ensure the integration of the core competencies outlined in the National Guidelines into educational institutions by securing the official endorsements and support of key professional organizations and decision-making bodies.

Expected Outcomes

Professional organizations, licensing and accrediting bodies, administrators, and educators will agree that these competencies are essential to the education of primary care providers and will integrate or support their integration into core curricula.

Target Audience

Awareness and Motivation: This component targets key accrediting bodies and associations for academic institutions, along with academic deans and faculty committee chairs. The emphasis here is on raising awareness and motivating decision-makers to bring about change in academic institutions that prepare health care providers.

Maintenance/Sustainability: This component also targets key professional associations to endorse and support the implementation and outcomes of this Initiative over the long-term. The Initiative will only be successful if its expected outcomes are institutionalized into the educational settings for health care provider training.

Proposed Activities

Activity #1

Promote competencies with professional and decision-making organizations and academic institutions (along with the case statement) through strategic meetings and outreach. Highlight the specific recommendations in the National Guidelines on competencies, along with specific examples of how an educational institution could integrate the content into curricula.

Activity #2

Publish editorials in nationally recognized journals promoting the idea of integrating into curricula specific strategies from the National Guidelines.

Activity #3

Develop a position paper on the need for competencies to be posted on the internet, and for use in meeting with decision-making bodies.

Activity #4

Identify and promote incentives for faculty to teach core competencies, including financial incentives in the form of grants, faculty development, curriculum development, and research, instructional teaching and training aids, expert consultants, clinical access, release time for faculty development, curricula development, and establishing appropriate clinical sites and teaching venues.

Stakeholders

- Professional specialty organizations, licensing boards, accreditation/certification bodies
- National professional associations

Evaluation of Outcomes/Indicators of Success

- New position papers by targeted organizations that support the integration of recommended pesticide content into curriculum.
- New requirements by professional decision-making bodies that require institutions to teach about health effects from pesticides.
- Published journal articles in professional newsletters and peer-reviewed journals.

Background

The success and sustainability of this Initiative will only be achieved if the institutions themselves find ways to integrate pesticide-related content into health professional education. The best mechanism to reach such organizations is for individuals involved in this Initiative to meet one-on-one with key leaders and offer them simple and easy ways that they can endorse and/or adopt this Implementation Plan.

EDUCATION COMPONENT E:

Strengthen and Build Faculty Champions

Statement

Create and support faculty champions within medical and nursing schools to teach environmental health and pesticide education in the curriculum, and to bring about change within their institutions. A champion, for purposes of this Initiative, is defined as a faculty member who takes a leadership role in integrating environmental health and pesticides into his/her institution in a sustainable fashion. This component is designed to ensure that a strong cadre of faculty champions is developed across the country who will lend expertise and support for this effort in their institutions and surrounding communities.

Expected Outcomes

- Funding of 146 faculty champions, including one faculty champion in all 126 academic health centers¹ in the United States, plus an additional 20 faculty champions in 20 other higher education institutions to ensure a balance of medicine and nursing faculty as well as representation from diverse institutions.
- Additional support for 10 of the academic health centers to serve as regional technical assistance centers.

Target Audience

Champion Building: This component targets faculty members who are ready to become a part of a cadre of faculty from across the country who will teach courses, integrate competencies into curriculum, and serve as a model for how to integrate environmental health and pesticides into health professional education. The target audience is convinced of the importance of this issue and has enhanced its knowledge and skill level.

Proposed Activities

Activity #1

Identify and select several model academic setting programs based on the existing work of faculty across the country, with specific focus on primary care faculty members. Hold a small

¹ While the organization and structure of academic health centers vary, every center comprises an allopathic and osteopathic school of medicine, at least one other health professional school or program, and one or more owned or affiliated teaching hospitals.

invitational workshop of model programs and develop several models on which to base the funding for all 146 academic institutions.

Activity #2

Develop key required elements for a model faculty champion program including the following:

- Faculty member with 25 percent time availability.
- Faculty member trained in primary care (defined as pediatrics, family practice, internal medicine, obstetric/gynecology, emergency medicine, or preventive medicine/public health).
- Commitment of staff time (part-time health educator and administrative support).
- Existing and proposed partnerships within the academic health center to ensure that the faculty champion's work reaches all schools within the institution.
- Teaching and curriculum development component, including baseline analysis of student knowledge and skills.
- Institutional change component with specific strategies articulated for changing institutions to support teaching environmental health/pesticides.
- Community-based sites for student practicum, internships, residencies.
- Advisory Committee, inclusive of environmental health expertise, curriculum committee members, community members.
- Opportunities to link teaching with research activities.
- Plan of action for five year integration.
- Evaluation component.

Activity #3

Establish a coordinating body to manage the grant-making process, to convene the grantees, and to provide technical assistance to the faculty nationwide. The tasks of the national coordinating office are to:

- Develop the RFA with the federal agencies; manage the application and grant-making processes.
- Produce a faculty guidebook with model programs on which faculty are asked to base their activities.
- Convene faculty for a working session to introduce model programs and work with project design. Annual meetings will be held in subsequent years.
- Set up ongoing technical assistance and evaluation effort with faculty members to be available for the length of the project.

- Establish regular forms of communication among faculty members, including regional meetings, web-based interactive activities, online submission of teaching modules or other curricular pieces, and formative and summative evaluation.
- Present ongoing findings at national conferences and assist on national issues as they may arise.
- Coordinate entire evaluation effort.

Activity #4

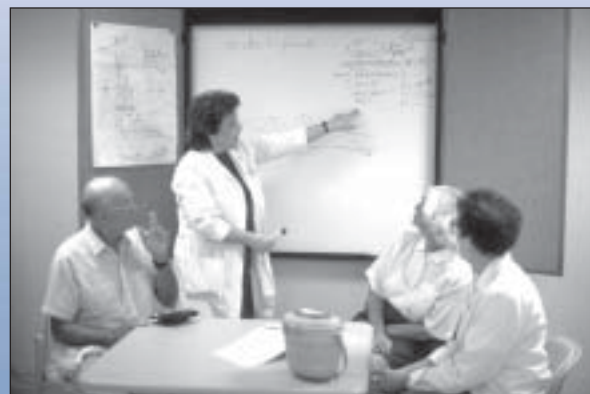
- Release RFA to academic institutions for a five year grant funded effort. Ensure diversity in faculty and disciplines selected. Publicize RFA process. Select 146 faculty champions. Applications must include all items listed in Activity #2 along with a timeline for completion.
- Incorporate a capacity-building mechanism into the grant-making process by creating 10 regional networks of faculty members where the exchange of technical assistance can take place. To achieve this, one academic center in each region would be granted additional funding (through a competitive process) to provide technical support to new faculty champions in that region. In this way, the program will help transfer knowledge and expertise from existing champions to new faculty members, while also supporting the additional time spent by existing champions.

Activity #5

Launch the effort with the announcement of the 146 faculty champions and ten regional centers receiving additional funding. Faculty efforts will last five years with specific increments identified for evaluation, workshops, submission of work, and activities via the websites, and quarterly/annual reviews. Throughout the entire process, the national coordinating organization will build the cadre of faculty nationwide (see Table 8).

Stakeholders

- Collaborating federal agencies
- Key association for health professional schools
- National coordinating body



“If we're going to make this successful, we have to grow our own [champions], and that takes some time.”

– Candace Burns, PhD, ARNP
National Organization of Nurse Practitioners

Table 8: Proposed Design of Faculty Champions Project

Institution Funded	Activities Funded	Individuals Funded	Length of Funding
National Coordinating Organization	Overall coordination and management of project and administrative staff	Project Director, (100 percent FTE), Coordinator (100 percent FTE), Webmaster	6 years (design, implementation and evaluation)
10 regional centers (one per EPA region, chosen from academic health centers)	Existing faculty champion support plus technical assistance support for faculty in the region	Faculty Champion (50 percent FTE), Regional Coordinator (50 percent FTE), administrative staff	5 year grant period
146 academic sites (126 academic health centers + 20 representing diverse populations and nursing schools)	Implementation of one of several models in academic institutions, including inclusion in curriculum, and institutional change	Faculty champion (25 percent FTE), administrative support	5 year grant period
Evaluation Team^a	Formative and summative evaluation	Evaluation staff	Portions of all 6 years

^aMay be subcontracted by the national coordinating organization.

Evaluation of Outcomes/Indicators of Success

The entire component will be evaluated based on the following indicators:

Project Outcomes (1–5 year funded project)

- 146 institutions with documented integration of pesticides/environmental health into curriculum.
- 146 institutions with increase in students’ basic knowledge and skills in pesticide/environmental health.
- 146 institutions with increased FTE time devoted to environmental health.
- Increase in number of practice/field experiences in environmental health sites
- Increase in environmental health research activities.

Project Outcomes (post 5-year project)

- Increase in new researchers investigating environmental health.
- Increase in number of primary care providers out of the pipeline who address environmental health in practice and research.

- Sustainable institutional change in majority of 146 institutions.
- Changes in the way health professionals address environmental health (measure of overall effectiveness).

Background

This component proposes a significant investment of funding to build a strong cadre of faculty champions. The funding would pay for part of a designated faculty FTE, plus a half-time position for administrative and content support at 146 institutions. The funding would also support ten regional centers headed by an existing faculty champion and designed to provide technical assistance and support to new faculty members in the region. The champion would use a variety of educational methodologies (required courses, integration within existing courses, field experience, and links with community members and organizations), and would link with other schools, departments, and organizations as part of a national network of champions. In particular, it is recommended that faculty champions coordinate with model practice sites (see Practice Component E, p. 79). The intent is for the faculty champion to base his/her activities on selected model programs that have already undergone evaluation.

The idea of creating and strengthening “champions” of pesticide/environmental health education came out of the Education Workgroup’s discussion of how important a role individuals can play at an institution. A threshold level of funding and security of funding is needed to encourage institutions to hire and/or nurture pesticide/environmental health champions. A multi-year commitment is also necessary to make it worthwhile both for the institution and the champion. Much of the champion’s time should be spent institutionalizing the pesticide/environmental health component by developing faculty interest/knowledge and integrating it into curriculum, both in medicine and nursing disciplines. Otherwise, when the grant funding ends, the environmental health/pesticide component is likely to be viewed as “nice but not necessary” and may disappear at the next curriculum change cycle. The proposal developed is for five year funding, with funding possibly decreasing in years 3-5.

It is recommended that all academic health centers receive funding at the same time. It is important to make the funding equal across academic health centers. This component will fund 126 academic health centers and an additional 20 institutions to ensure a balance between medicine and nursing, and the inclusion of diverse institutions. Faculty champions will be selected equally from the disciplines of medicine and nursing. Faculty champions will also be selected from primary care. Given that some institutions already have faculty champions, the project will include an opportunity for such institutions to compete for regional center grants. The regional centers will be required to provide technical assistance and support to new faculty champions in the region. The entire project will build upon other faculty champion models that have been created for other subject areas nationwide.

EDUCATION COMPONENT F:

Create Teaching Incentives

Strategy

Influence the appropriate boards, organizations, and institutions that create Board exams and set curriculum requirements to include several key competencies on pesticides and environmental health.

Expected Outcomes

- Questions on Board exams
- Changes in curriculum requirements

Target Audience

Awareness and Motivation: This component targets decision-making organizations that set curriculum requirements, entities that write Board and certification examinations, and faculty who teach the courses. This component is designed to convince these decision-makers to integrate elements that address the health effects from pesticide exposures. This component will also provide “ready-made” language on requirements and/or exam objectives and questions.

Proposed Activities

Activity#1

Conduct an initial assessment to determine number of questions related to pesticides/environmental health on examinations. Identify or develop sample examination questions. The assessment will also list timeframes for changes in requirements/Board exam questions by key decision-making bodies.

Activity #2

Develop a succinct strategy for approaching the organizations/decision-making bodies that develop Board and other examinations, including specific recommendations for educational objectives, questions and language changes. Action items include:

- Convene a working group of high level external partners and key federal agencies to develop a strategy/position paper. This group should be drawn from the Association of American Medical Colleges, the American Association of Colleges of Nursing, the American Association of Occupational Health Nurses, the American College of Occupational and

Environmental Medicine, the American Medical Association, the American Nurses Association, the American Academy of Physician Assistants, and American College of Nurse Midwives. In addition, federal agencies could include National Institute of Environmental Health Sciences, National Institute for Occupational Safety and Health, EPA, and Health Resources and Services Administration.

- Create a strategy that recommends specific content (per National Competency Guidelines in Education Component B) and insertion points into specific Board exams and specialty requirements. Strategy will also set targets for change.

Activity #3

Contact decision-making bodies and provide with them with a specifically tailored position paper and recommended changes to questions, exams, and requirements. Include the endorsement of the relevant working group organizations. Identify Boards and schedule using the following outline of priorities:

Short-term Priorities

Medicine

- United States Medical License Examination (Steps 1, 2, 3)
- Board Examinations in Family Practice, Pediatrics, Internal Medicine, Ob/Gyn, Emergency Medicine

Nursing

- AANC generalist examinations
- Nurse practitioners — adult, pediatrics, family, gerontological (ANP, PNP, FNP, GNP)
- Nurse midwives — American College of Nurse Midwives (ACNM)
- Clinical nurse specialists (CNS)

Longer-term Priorities

- Physician Assistants
- Pharmacists
- Basic Nursing
- Genetic Counselors

Stakeholders

- Key national decision-making bodies for curriculum changes, requirements, and examinations
- National professional association
- Key federal agencies involved with health profession education
- Faculty members

Evaluation of Outcomes/Indicators of Success

- Increase in the number of questions in the examination pool and on each examination as compared with the initial assessment.
- Changes in requirements for primary care disciplines (pediatrics, family practice, internal medicine, preventive medicine/public health, emergency medicine and obstetrics and gynecology) to include pesticides/environmental health.

Background

One way to motivate change in curricula is to convince the medical and nursing examination boards of the importance of environmental health in the coming years, and urge them to incorporate environmental health questions on their exams. This would also be one of the better ways to institutionalize the subject matter over the long-term. Some of the boards are expected to be receptive to a concerted effort in this area; for example, the Residency Review Committee for Pediatrics in 1997 adopted two recommendations on children's environmental health.